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ILLUSTRATIONS

OF

ACOUSTIC SURGERY.

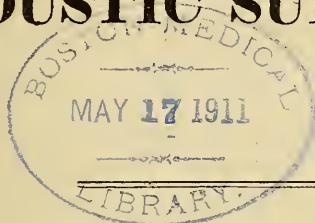
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ILLUSTRATIONS

OF

ACOUSTIC SURGERY.



BY THOMAS BUCHANAN, C. M.

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&c. &c.

SURGEON TO THE HULL DISPENSARY FOR DISEASES OF THE EYE
AND EAR, AND AUTHOR OF THE GUIDE TO ACOUSTIC SURGERY.

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TO

SIR ASTLEY COOPER, BART. F. R. S.

SURGEON TO HIS MAJESTY,

&c. &c. &c.

SIR,

Encouraged by the favourable manner in which You received the " Guide to Acoustic Surgery," I have ventured to place the following Treatise under Your more immediate notice, in the hope—as my first effort met Your approbation, these ILLUSTRATIONS will secure a farther continuance of such distinguished patronage.

I remain,

SIR,

Most respectfully,

HULL,

March 17th, 1825.

Your most obedient

Humble Servant,

THO. BUCHANAN.

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ERRATA.

Page vii, line 14, for 'sonorous rays' read 'the undulations of sound.'

- 38 — 12, 'for oriface,' read 'orifice.'
- 54, — 9, dele the words 'of the complaint'.
- 56, — 16, for 'Imperfectum' read 'Secretio Imperfecta.'
- 60, — 8, for 'Infirmatum' read 'Infirmitas.'
- 80, — 17, for 'Inflammatum Externum' read 'Inflammatio Externa.'
- 80, — 19, for 'Permanenti' read 'Permanente.'
- 81, — 1, for 'Diminuto' read 'Diminuta.'

INTRODUCTION.

FROM the very favourable manner in which the 'Guide to Acoustic Surgery' was received by those best able to judge of its merit, I was induced to extend my efforts in that department; and the result has been the remarks contained in the following pages.

Several of the operations described, may perhaps appear uninteresting to the general practitioner—but which are so connected with the treatment of the diseases of the auditory organs, that a knowledge of the principles on which they are performed, is absolutely necessary to all those who may attempt to treat of the diseases of the human ear.

And that unless the practitioner be able to discriminate between these diseases and their species, as well as to select that mode of practice the most eligible for the cure of these complaints; and at the same time, dexterity and delicacy in the manual application of the remedies or operations necessary to be performed—the consequences will be fatal to the indication of cure,

In the first chapter, will be found an account of a *new instrument*, with which the meatus or tympanum may be inspected with equal facility, during the night as in the day.

In the article ‘*Syringing the Meatus*’ the principles on which this operation *ought* to be performed, is illustrated by a plate, exhibiting the natural size of the parts, and of the instruments.

Although the idea of the Auricular Pad be *novel*, yet it will be found, on trial, of considerable utility in keeping the edges of the wounded

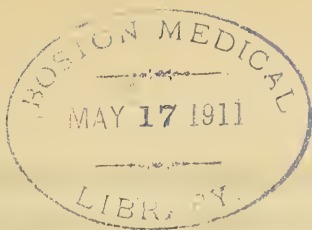
auricle in apposition, accelerating the cure, and preserving the symmetry of the parts.

The method recommended in extracting indurated wax, and extraneous bodies from the meatus, is agreeable to the mode of practice which I have followed in such cases, and with the greatest success.

In the treatment of purulent discharge from the meatus, accompanied with diminution of hearing, a *new remedy* has been introduced, that has the valuable properties of destroying the fetor usually attendant on chronic discharge, whether from ulceration, or caries; and of rendering the organ more susceptible of the impression of *the sonorous rays*, during the curative process, than any other with which I am acquainted.

To those who wish to obtain a knowledge of the elements of Acoustic Surgery, it is hoped that the following remarks will be interesting; and, as they will be found to elucidate some of

the principles on which the 'Synoptical Table of the Diseases of the Human Ear' was formed, so it is thence presumed, that these *Illustrations* will be of considerable utility to those who have read that work.



CHAPTER I.

On the mode of inspecting the Meatus, with a description of the Inspector Auris.

As nothing tends more to accelerate the cure of disease than an accurate knowledge of the situation and state of the parts affected, so it is therefore highly necessary, that, on the first application of a patient complaining of aberration in the functions of the organ of hearing, the *meatus auditorius externus* be immediately inspected.

For this purpose the patient ought to be placed on a low seat, with the ear complained of exposed to the rays of the sun, divested of head-dress, bandages, or whatever may impede the view of the parts affected.

The surgeon should then lay hold of the auricle with the left hand, by placing the thumb in the concha, and with the index and middle finger of the same hand placed behind the cartilage, grasp hold of the cavity, and pull it outwards and upwards, so as to elongate the cartilaginous part of the meatus, taking care at the same time to bring the tube in a line with the rays of the sun.

By this means, and with the help of a probe (slightly curved) in the right hand, so as to draw the tragus a little outwards, and thereby increase the diameter of the tube, the whole of the meatus and membrana tympani may then be distinctly seen; unless the view be obstructed by indurated wax, accumulation of suppurative matter, increased curvature of the tube, enlargement and induration of the cerumenous glands, or, diminutive diameter from malformation.

Although these directions may appear unimportant to the scientific aurist, yet they will be

found of great service to the young practitioner, as it will enable him to ascertain the extent and nature of the complaint when situated in the external tube of the ear.

I have known several surgeons in extensive practice, who have confessed that they had never been able to see the membrana tympani in the living subject; and yet these gentlemen at the same time had under their care patients affected with diseases of the auditory organs.

From this circumstance *alone*, may be deduced the utility of the preceding directions.

Easy as it may appear to apply these directions in favourable weather, and when the patient is placed in the position described, there is however no part of the human frame so difficult to inspect after sunset, or in dark cloudy weather, as that of the meatus, near the membrana tympani—even in the well-formed ear.

When it is inspected by the light of a candle, scarcely one half of the tube can be distinctly seen, the other half appears to penetrate deeply into the cranium, but its termination is lost in almost palpable darkness.

There is then no criterion to assure the existence and healthy state of the membrana tympani, except the well-known experiment of inflating the membrane, by keeping the nostrils and mouth shut during the time that the patient is forcing part of the air contained in the thorax into the tympanum.

But in the event of a temporary, or permanent closure of the eustachian tube, this experiment is rendered useless; and the surgeon, unable to view the parts, is obliged either to give such medicines as may amuse the patient for the night, or to desire him to call again when the weather is more favourable and the sun nearer the meridian. The state of society in the present day being such, as to preclude numerous

classes of artisans from complying with this reasonable request, the consequences are sometimes fatal to the healthy state of the organ.

Nor is this all, for the abilities of the practitioner are often called in question by those who instead of expected relief, find only procrastination of their hopes, until the radiant beams of the sun on some future day, conjoin to favour the inspection.

Should professional business compel the attendance of the surgeon elsewhere, at the appointed time for inspection; the patient who has perhaps waited at great inconvenience to himself, retires chagrined and disappointed; and either applies to another surgeon, or to remedies destructive to his health and hearing.

However skilful the practitioner may be, a succession of cases similarly conducted, whether from negligence, pressure of business, or improper time of application, will have the effect of diminishing his reputation and practice.

I have often found considerable inconvenience arising from patients with affections of the ear, who were obliged to attend their respective employments until late in the evening, when they called on me for relief.

On endeavouring to inspect the ear affected, by means of a candle, I have in general found it impracticable to ascertain the real state of the disease; even in a dark cloudy day, I have frequently been obliged to desire patients to call when the weather was more favourable.

Unwilling to continue this routine of practice, so inconsistent with dispatch of business, but from which I could not deviate consistently with the duty I owed to my patients and to my own reputation, I resolved to construct an apparatus which would concentrate the rays emitted from a candle into the meatus, and by that means illuminate the tube and membrana tympani, so as to afford a full view of the cavity.

I was the more encouraged in my design, from the success which attended an attempt that I made one evening to inspect the ear of a friend, with a double convex lens of considerable power. The whole of the meatus was seen, but not so distinctly as I could wish.

Besides, I had to hold the lens in one hand, while I endeavoured to elongate the cartilaginous part of the tube with the other, and this circumstance alone, was extremely inconvenient.

I now found the utility of having my intended instrument placed so that I might have both hands at liberty, to apply them to whatever purpose of investigation I might find necessary.

In plate I, is a sketch of the instrument which I have called an Inspector Auris, a term significant of its real use.*

* EXPLANATION OF THE PLATE OF OUTLINES OF THE
INSPECTOR AURIS.

- A. A globular lantern, made of block tin, with a large door on one side.

In dark cloudy weather, the Inspector will be found of the greatest service; for on closing the window-shutters, so as to exclude daylight, and placing a lighted candle in the globular lantern, and adjusting the focus of the instrument to the interior part of the tube, the meatus and membrana tympani may by this means be inspected, and the parts seen as well as when exposed to the rays of the sun.

- B. An iron tube. The inside polished and firmly secured to the lantern.
- C. A tube of the same description, but shorter, and made to screw on the end of the tube B.
- a.* A double convex lens, of about three inches focus, and three inches diameter.
- b.* A concave lens to collect the rays emitted by *d*, and transmit them to *a*,—its focal distance the same as *a*.
- c.* A double convex lens of less diameter than *a*, which concentrates the rays at the distance of about seven or eight inches from its surface.
- d.* A candlestick situated equidistant from *a* and *b*, in which is placed a lighted wax candle.
- e.* Head of the lantern, with small oblique holes to let out the smoke.

In summer, when the weather is remarkably clear, and the sun near the meridian, the concentration of the rays in the meatus has sometimes the effect of dazzling the eyes of the practitioner when endeavouring to inspect the parts; but this can never happen from the use of the Inspector Auris—for the rays emitted by it, are so softened, though clear, that the eye

f.f.g. Circular pieces of tin attached to the superior and inferior parts of the lantern, to prevent any rays from escaping in these directions.

h. A perpendicular piece of iron. The superior part forms a ring, into which the tube B is fixed; the inferior part, a male screw about ten inches in length.

i. The standard made of iron, the perpendicular part of which is about twelve inches in height; in the centre is a female screw, to contain the male screw of *h.*—The bottom is circular, and about a foot in diameter which by its solidity will prevent the apparatus from being easily overturned.

By means of the male and female screws the lantern and tube can be raised or lowered, so as to suit the height of the person whose *ear* is to be examined, and that the rays may be thrown into the *meatus*, and illuminate the *membrana tympani* and parts adjacent.

is little hurt by the application of the instrument, and it is always in the power of the operator to moderate or increase the intensity of these rays, by regulating the distance of the Inspector from the head of the patient.

The use of this instrument might be extended to inspecting the fauces in cases of scarlatina maligna, or ulceration of the parts from whatever cause.

As patients of this description are frequently confined to bed at the time, and in many instances, the physician or surgeon is called in the night; so the Inspector will be found of considerable utility when the medical attendant is desirous of minute and accurate inspection.

It could also be applied when extirpating nasal polypi, to examine if any portion of the tumour were remaining after the operation.

The consequence of the want of an instrument

of this kind, has often been, a return of the disease and dismissal of the practitioner.

In large deep sinuses, but more especially large tumours which have been opened, it is sometimes desirable to know the real state of the cavity; and here the Inspector might be applicable.

It might be extended to inspecting the vagina and os tincæ, in cases of disease of the parts;* in short, in the hands of an able adventurous surgeon, it might be of general utility in inspecting cavities of whatever description, that are situated in the living subject.

As I intended this instrument solely for the

* For this purpose I would recommend Weiss's improved Female Dilator, to which the Inspector will be found a useful auxiliary; for although the vagina might be dilated by means of the improved dilator, yet the parts could never be distinctly seen by the application of the dilator *alone*, the Inspector is therefore necessary to illuminate the parts, in order to ascertain the nature and extent of the disease.

inspection of the meatus auditorius externus, so I have thence called it an Inspector Auris; a term which implies this special use, and for which it will be found well adapted, by all those who may have extensive practice in treating diseases of the human ear.

CHAP. II.

On Sounding the Membrana Tympani; with a description of the Auricular Probes.

THIS operation requires great delicacy and dexterity in the operator, in order to avoid injuring the parts, or giving pain to the patient; and for this purpose I would recommend an instrument of the following description, which may be called an Auricular Probe.

The body of the probe should be about *three inches* in length, made of the best tempered silver, about $\frac{1}{8}$ of an inch in thickness; and to increase gradually towards the handle, and to have a round nob on the extremity, about $\frac{1}{8}$ of an inch in diameter.

The handle ought to be about four inches in

length, and two lines in diameter; to be made of a thin plate of silver, beaten from, but connected with the body of the probe; to be hollow, and of an octagonal shape, and to have two oblong apertures of one line in length and a quarter of a line in breadth, the one situated about an inch from the end, and the other about half an inch from the body of the probe.

From the one aperture to the other, the handle ought to be rough and crossed, so as to resemble the end of a common sound.

The aurist ought to have two instruments of the above description, the one straight, as delineated in plate III, figure 1st, and the other curved similar to that of figure 2nd, of the same plate.

Before attempting to sound the membrana tympani, the meatus of the ear affected ought always to be first washed out with tepid water, by means of a syringe, and afterwards inspected.

The tepid water will allay the extreme irritability of the membrane, and remove foreign substances, or matter, so as to afford an opportunity of viewing such parts of the meatus as may not be obscured by extreme curvature.

If the surgeon should be still inclined to sound the membrane after inspection, he ought to put the auricular probes into ol. amygdal. which has been previously heated, and keep the instruments in the oil until they are warmed to the temperature of the blood.

He should then place the patient in the position described in the mode of inspection, and with the probe, No. 1, held in the right hand, in the same manner as a pen when writing, endeavour cautiously to ascertain if there be any aperture in the membrane.

Should his efforts with this probe be unavailing, and there be reason to suspect that the interior and inferior parts of the tube are laid

bare, or divested of part of the cuticle and other membranes; the practitioner should then use the probe marked No. 2, and by means of its curvature he will be able to apply the nob on the extremity to any part of the meatus, and likewise to the membrana tympani, if he judge it necessary.

I by no means recommend this mode of investigation, unless in those cases where the curvature of the tube is so great as to render the membrane partially obscure, notwithstanding the rays of the sun, or those of the inspector auris, may have been concentrated in the meatus for that purpose,

If the patient be unable to inflate the membrana tympani,—a considerable quantity of matter be discharged daily from the meatus,—and the tube be of great curvature, the surgeon ought then to ascertain the source and extent of the disease by means of the auricular probes,

If a common blunt probe were to be used, the operator could not ascertain so well the extent of the injury with *it* as with the one described above, by reason of its strength and clumsiness when compared to the delicacy of the operation; except he were to apply it in such a manner as would naturally irritate the parts, and produce very disagreeable sensations.

Irritation ought to be avoided in every operation to which the organ may be liable, but more especially in sounding the membrana tympani; for, although part of the membrane may be destroyed by ulceration, yet the ossicula auditus may remain in situ with the manubrium of the malleus, attached to the remaining part of the membrane, and when the case is skilfully treated, the patient may recover his hearing considerably better than could have been expected from the state of the parts previous to the cure.

The head of the patient ought always to be well secured during the operation, because of

the extreme sensibility of the membrana tympani, which in some persons is so great, that upon the application of any foreign substance, they have been thrown into convulsive agony; and by that means the membrane has sometimes suffered irreparable injury.

CHAP. III.

Syringing the Meatus.

THIS is an operation more frequently performed on the human ear than any other with which we are acquainted; and though simple, yet the principles on which it ought *to be* performed are less attended to than those of a more complex nature.

An auricular syringe ought to be made of silver, ivory, or bone; the barrel, or body, to be about four inches in length, and three-quarters of an inch in thickness, with a point of about two inches in length, and seven-eighths of a line in diameter at the extremity, and should contain about three drams of injection.*

* This is the description of an old syringe made of bone, which I found so useful, and well adapted for the purpose,

The syringe ought to be held in the left hand between the index finger and thumb, placed near the middle of the point, grasping the upper part of the point and also part of the instrument, and supported in this position by the middle finger along the barrel, while the other two fingers lie close to the palm of the hand, thus affording a rest to the body of the syringe.

When the meatus is to be syringed, an assistant ought to secure the head of the patient with one hand, by supporting the chin, and keeping the side of the head nearly horizontal; and with the other, elongate the cartilaginous part of the tube, by pulling the auricle upwards, and a little backwards.

The operator, with the syringe filled and held in the manner described, should then place the back of his left hand on the angle of the lower

that I gave it a place among the auricular instruments.

maxillary; and by this means the instrument will be kept steady.

He should then enter the point of the syringe into the meatus, nearly half an inch, and press it rather against the superior edge of the tube, so that it may occupy as little as possible of the diameter of the meatus.

The piston should then be pushed inwards, and the injection thrown to the extremity of the tube with such force as the surgeon may judge necessary.

If the injection be supposed to contain medical qualities, of a stimulant or sedative nature it ought to be retained in the meatus from one to three, or even five minutes.

This is easily effected by the operator withdrawing the syringe quickly, (after the injection has been delivered,) and then placing the thumb of the left hand forcibly on the tragus,

so as to block up the meatus and exclude the external air.

When the injection has remained a sufficient length of time in the meatus, a clean towel should be applied, to dry up the fluid as it issues from the ear; and the mouth of the tube should then be brought downwards, by elevating the opposite side of the face.

It would be very convenient if the patient were to be covered with a large wax cloth, drawn and tied round the neck, so as to prevent the injection from wetting or spoiling the clothes.

The advantage of holding the syringe in the manner directed, will appear evident to persons of the least capacity; for if the patient should start, by reason of the strange sensation caused by the introduction of tepid liquids into the meatus, and the surgeon keep the syringe in the above position, there will be no danger to

be apprehended from the point of the syringe injuring the membrana tympani. But, if the operator hold the syringe carelessly in his hand when forcing the injection into the meatus, and the patient should then start, or shift the head suddenly, the point of the syringe might be forced violently against the membrana tympani, rupture of the membrane take place, and very serious consequences might ensue to the ossicula auditus, from the careless performance of this seemingly trivial operation.

Now this can never happen when the syringe is held as described; because, when the index finger and thumb are kept in the above position, they will effectually prevent the farther introduction of the point of the syringe into the meatus, and thus ensure safety to the patient, and credit to the operator.

When the indication is to extract indurated wax, or foreign substances, the injection should be thrown into the meatus with a considerable

degree of force, and when it arrives at the membrana tympani, it will form there a counter current, nearly as strong as when ejected from the syringe, which will force all loose extraneous bodies outwards. From the small portion of the tube that is occupied by the point of the auricular syringe, beads, peas, and other foreign bodies may in this manner be extracted with little pain or danger, and without meeting any obstruction from the point of the syringe.

When forceps are used in extracting beads, or other globular bodies from the meatus, there will be great danger of the extraneous substances slipping farther into the tube, and of being pressed against the membrana tympani when the attempt is made to extract by this instrument.

But a syringe with a slender point will obviate these difficulties, by means of the counter current of the injection pushing outwards all loose foreign bodies; except such as may have

been forced into the tube, which will require other means of extraction.

It is for these reasons that I disapprove of the form of a syringe which is recommended by an eminent surgeon in London; the point is of so large a diameter that it completely plugs up the meatus, so that if the person syringing should force the piston violently inwards, there will be great danger of rupturing the membrana tympani, and dislocating the ossicula auctus, from the quantity of liquid thrown into the meatus, and the counter current of the injection being obstructed by the point of the syringe.

This syringe holds fourteen drams of injection, and is intended to be used by the patient without the aid of a surgeon, or an assistant,—a practice fraught with danger.

In plate IV, figure 1st, we have a section of the meatus A, and of the syringe B, the point of which completely blocks up the meatus; and

if the piston C should be forced inwards, the injection contained in the syringe must be sent into the meatus, which is not capable of containing the tenth part of a syringe-ful of injection of this size.

It must therefore necessarily rupture the membrana tympani D, or else the point of the syringe must be withdrawn.

It is quite impracticable to extract either indurated wax or globular bodies, by means of this syringe.

In figure 2nd of the same plate, we see the principles on which the syringe ought to be used when applying injections to the meatus.

The point is so slender that it admits the counter current to escape freely, and by the same means, all loose extraneous substances will be carried outwards.

Nothing has brought the operation of syringing into greater disrepute than its indiscriminate use in all cases of deafness, or diminution of hearing.

Aurists are almost universally in the habit of syringing the ears of their patients, in order as they assert, to restore the sensibility of the parts, and thereby increase the acuteness of hearing.

But because that in some instances, immediately after the meatus has been washed out with tepid injections, the patient may have heard rather better than before the operation, is it thence to be inferred, that it will *always* succeed in restoring the organ to a permanent use of its functions.

The contrary is most frequently the result of this mode of practice; for, of a hundred patients who may have been in the habit of having the meatus syringed with tepid water

for diminution of hearing, scarcely one will be found to have gained permanent relief by this mode of practice.

I am therefore of opinion, that syringing the meatus with tepid water, is of no other utility than to allay irritation, clear the tube of extraneous substances, indurated wax, or suppurative matter, and by that means promote the inspection of the parts; or, in keeping them clean and preventing the accumulation of matter, in order that medicated injections, or medicine in some other form may be applied to the abraded, ulcerated, or callous surface of the tube.

CHAP. IV.

Wounds of the Auricle.

Extensive wounds in the auricle are seldom to be met with in private practice; on a fair calculation they will be found to be in proportion to that of the other complaints of the organ, as one is to two hundred.

In the military or naval service, they will be found more frequent, according to the department in which the estimate may be taken; but although these accidents are rare, yet we hope a few remarks on the subject will not be considered superfluous.

If the wound be inflicted by means of a stick or bludgeon, so as to cut the skin, and graze or damage the cartilage, the parts ought to be

washed with tepid water, the edges of the skin brought in apposition, and secured in that manner by small stripes of adhesive plaster.

If the greater or any part of the *auricle* be cut off, the part so separated should be immediately washed carefully in tepid water, and the edges brought in apposition with that of the root of the auricle, one or two sutures passed through the skin, and the parts likewise secured by strips of adhesive plaster.

If the sutures be made of silk they will cause less irritation than those made of common thread.

In large wounds of the *auricle*, it is absolutely necessary to apply sutures; because, although the edges of the wound may be retained in the desired position during the *day*, by means of adhesive plaster and bandages, yet without sutures and a pad, constructed so as to support the parts, in addition to the adhesive plaster

and bandages, there will be great danger that by some motion of the patient in the *night* when asleep, the bandages and parts may be so deranged, that the whole dressing must be undone, and the edges of the wound be again brought into apposition, to prevent disfiguration of the auricle.

The consequences of such a mode of treatment are sometimes fatal to the indication of cure, viz.—union by the first intention.

But by means of sutures, adhesive plaster, pad, and bandages, the wounded parts may be retained in their natural form, and the cure effected without any other injury than a slight line of cicatrization.

The pad may be formed of wool or cotton, made so as to fill up the vacancy between the head and the back part of the auricle.

It ought to be made of a semilunar shape,

with depressions and eminences to suit the auricle. It should also be sewed and quilted, so as to make it capable of retaining the form necessary to support the parts.

Or, it may be made very conveniently of *cork*, which is light, easily procured, and would retain whatever form it had at the time of application, more permanently than either a cotton or woollen pad; and would thereby tend to preserve the natural appearance of the auricle, which is an essential requisite in forming a complete cure.

If a cast in paris plaster were to be taken of the space between the opposite auricle and the cranium, it might serve as a model to shew how the cork pad ought to be cut, which should always be rather thinner than the cast.

When the pad is formed, it should then be brushed all over with a thin coat of glue, and immediately afterwards rolled in fine cotton wool.

When the glue is well dried, the loose cotton which is not attached to the *pad* may be plucked off, and if it be still rather large, it may be easily reduced by a pair of scissors.*

The advantages of a *pad* of this description are incalculable,—it is light, easily made, soft and comfortable to the feelings of the patient, and will likewise support the parts and assist to retain them in apposition during the cure.

The aurist ought to have a variety of these pads, formed so as to suit the auricles of persons of all ages, which would prevent any bustle or delay taking place during the formation of a pad, when a patient was brought to be dressed for an accident of this kind.

The expence would be trifling, and the advantages great, particularly in shortening the period employed in dressing, and consequently accelerating the cure.

* See plate V, figure 1st.

In order that the pad may be retained in the proper position, a bandage ought to be passed horizontally round the head, within an inch of the auricle, and secured from slipping downwards by means of the end of the same bandage being turned over the head and fastened on the opposite side.

The pad should have a small piece of tape attached by its middle to the upper extremity, and the ends of this piece of tape ought to be sewed to the horizontal bandage, at about an inch and a half distance the one end from the other, so as to form a figure similar to the letter V. To the lower extremity of the pad a piece of broad tape or ribband should also be sewed, of sufficient length to pass under the chin, and to be fastened to the opposite side of the horizontal bandage.

A piece of narrow tape should also be sewed to the posterior and inferior part of the pad, the loose end to be passed under the occipital

protuberance, and fastened on the other side to the tape that is passed under the chin.

This narrow piece of tape will prevent the pad from pressing on the attachment of the auricle near the concha.*

The patient ought to be confined to his room during the cure, and the bowels kept freely open with the mixture of Formula No. 1.

The sutures may be extracted on the second or third day after the accident, which will prevent ulceration of the punctures that they filled, and will consequently tend to preserve the symmetry of the parts.

The practitioner may perhaps think, that it is trifling with his time and patience to be so *minute* in matters which may appear to him of trivial moment; but let him recollect, that the

* See plate V, figure 2nd.

auricle is almost as easily and sometimes as frequently seen as any part of the head or face. And let him put the question to himself, if he would wish to have so prominent a part disfigured through his inattention, which would constantly exhibit the marks of his ignorance and want of skill in the manual application of the principles of his profession.

It is therefore absolutely necessary that every surgeon should endeavour to acquire dexterity in the minutiae of that which may be thought by some to be of *minor* importance, but which is equally entitled to a place in surgery, as well as those that are usually classed amongst the *greater* operations.

Although these directions may assist the young practitioner in healing the wounds of this part of the organ, however extensive, yet when the auricle has been removed from its situation for a number of years, the case then admits of *no cure*; unless the probability of adhesion

between an auricle newly cut from a living person to the meatus of the patient, after the edges of the orifice of the tube have been rendered raw by the knife.

But this is a mode of cure which although it might be *possible* to effect, yet few patients would be willing to undergo the pain and hazard, as well on account of its singularity, as for the want of a healthy auxiliary auricle to make the experiment.

In order to supply this deficiency, and preserve the symmetry of the appearance of the head, various ingenious contrivances have been formed for supplying the loss of this necessary and graceful appendage.

The utility of these mechanical inventions consists in being formed as near as possible to the shape of the natural auricle, and that they should concentrate the undulations of sound, and transmit them into the meatus, in a manner similar to that of the healthy auricle.

If the right or left auricle be only wanting, let a cast in paris plaster be taken of the one opposite, which will serve as a model for the intended substitute, that should be made of silver, or other sonorous substance, and painted, so as to resemble the opposite ear.

When finished, it can easily be attached to the meatus, by means of a spring leading under the hair to nearly the opposite side of the head.

Or, a wig might be so constructed with fine springs, that would secure the auricle to the orifice of the tube, and also fasten the wig to the cranium; and which would likewise prevent the artificial auricle from being easily distinguished from the real one,

CHAP. V.

*On the mode of extracting extraneous substances,
and indurated wax from the Meatus.*

WE sometimes find in children a propensity to stuff their ears with that which may appear to them of most value, but frequently in imitation of adults whom they observe filling the tube of the ear with cotton or wool.

Those who have the care of children ought to abstain from introducing medicine, or any substance whatever, into the tube of the ear in their presence; and also to keep out of their reach all articles with which they might be able to injure the meatus or membrana tympani, whether by insertion or laceration.

Accidents of the former description occur

most frequently with beads, pebbles, or small nuts.

When the bead or globular substance is small, the best mode of extraction will be by means of the syringe, and injections of tepid water. For this purpose, the point of the syringe ought to be pressed gently against the edge of the meatus, so that it may occupy as little of the diameter of the tube as possible, and when the injection arrives at the membrana tympani the counter current will be formed there, which will force the bead or substance outwards. If the substance be rather large, it may perhaps remain at the entrance of the meatus, whence it ought to be extracted by means of a pair of forceps.

If it slip from the forceps inwards, the injection must again be tried, and the substance by that means forced outwards; and if it again remain fixed in the entrance of the tube, the operator must then endeavour to

extract it with more dexterity than in his former effort.*

The head of the patient ought always to be firmly secured by an assistant, and the hands held by another person, so that the operator may have both hands at liberty, to apply them as he may find most convenient to effect the extraction.

Some aurists recommend, that beads should be extracted by the forceps; but I have always

* If the points of the forceps were bent a little inwards, it would prevent the bead or globular body from eluding the grasp of the instrument.

In order to illustrate this axiom, let *a. a.* in plate III, figure 6, represent the legs of the forceps, *b. b.* the points, and *c.* the globular body or glass bead to be extracted. It is evident that if pressure be made at *a. a.* in order to extract the bead, that the body *c.* will be pushed towards the points *b. b.*, and finally escape the grasp of the forceps, because of the angle described by the limbs of the instrument when in the act of extraction, unless the points be curved inwards, similar to *e.* so as to catch beyond the perpendicular line in the centre of the bead.

succeeded by means of the tepid injections *alone*, sometimes after other surgeons had failed, when using both forceps and probe.

In one case a surgeon attempted in vain to extract a common sized bead from the meatus of a child of three years of age, and although he persisted in his efforts until the parts were injured by the use of the probe and forceps, so much so that the tube bled copiously, and the bead became fixed between the membrana tympani and the interior curve of the meatus, yet he was unable to effect the extraction

No surgeon ought to extract a globular substance from the interior part of the meatus with forceps, even if the instrument should be curved in this manner; because of the great danger which the membrana tympani might suffer from the substance slipping inwards, and likewise the pain which the patient must necessarily feel from this mode of extraction.

When the bead is lying partly in the concha and partly in the external orifice of the tube, the curved forceps may then be used with advantage; provided the operator acts with caution and address, but in no other instance is it admissible.

of the bead; he therefore desisted, and advised that no farther effort should be made. In a little time the blood was stopped, and the child was brought to me a few days after the attempt was made, in order to have my opinion of the case.

When I endeavoured to inspect the meatus, it required the exertions of two assistants to secure the head of the patient; but when secured, *I extracted the bead very easily, by means of tepid injections alone, and without any pain to the patient, who was perfectly quiet during the operation.*

If the extraneous substance be of wood, and firmly plugged into the meatus, a pair of dissecting forceps will be found of considerable service in extracting it when near the concha. But when the wooden substance lies high up in the tube, and near the membrana tympani, a pair of slender forceps similar to those of plate III, figure 4, (which I have called Auricular

Forceps,) will be found most convenient, because from the shape of the instrument the practitioner will be able to reach and lay hold of the substance, without injuring the orifice of the tube; which would suffer considerably if the common dissecting forceps were used by reason of their great breadth in proportion to the diameter of the meatus.

The forceps ought to be teathed on the inside of the points, which should be made to fit exactly, and also to be well tempered, so that they may not bend when in the act of extracting.

When insects, worms, or vermin lodge in the meatus the best mode of extraction is by means of an injection of the infusion of tobacco [Formula, No. 3] which will speedily destroy them and allay the irritation in the tube.

The parts ought to be washed immediately afterwards with an injection of tepid water, and

also a few drops of Ol. Amygd. poured into the tube, to prevent the patient catching cold from the warm injection.

When the meatus is filled with wax, the patient complains of diminution of hearing,—sometimes deafness,—various noises in the ear affected,—particularly when masticating.

The patient sometimes complains, that after yawning, or some other expansion of the jaws, he hears a sudden noise in the ear affected, similar to a ‘crack,’ and that immediately afterwards his hearing is restored, but that the noises still continue. On inspecting the ear, the interior parts of the meatus will be found occupied by a large mass of wax, which blocks up the tube and obscures the membrana tympani, except at the superior part, where the wax is detached from the tube, leaving in general a horizontal gap. It is through this aperture that the undulations of sound reach the membrana tympani, and thence the

vibrations are communicated to the nervous fasciculi.

The hearing becomes in a little time, however, gradually more indistinct than formerly; great diminution of hearing, and shortly afterwards deafness itself are the never-failing consequences of inattention to the above symptoms.

On inspecting the parts, the nature of the complaint may be easily ascertained, by the appearance of a large mass of wax, which blocks up the tube, excludes the view, and impedes the vibrations of the *membrana tympani*.

I have frequently found that patients affected with this complaint, had been in the habit of stopping up the mouth of the tube with cotton or wool, which by some means or other had been forced inwards, and thus formed a nucleus to the indurated cerumen.

Surgeons are sometimes in the habit of

extracting wax from the meatus by means of the end of a silver needle or probe; a practice which is certainly reprehensible, because of the danger which may be incurred to the membrana tympani by any sudden motion of the head of the patient.

The following method of extraction will be found to be fully more expeditious, and far more safe, than that of rashly groping in the tube with pointed instruments of any kind.

The ear complained of should be inspected, and if it appears to be partially filled with wax, a syringful of tepid water of about 90° Fahrenheit should be thrown into the meatus, and the thumb clapped on the mouth of the tube immediately after the point of the syringe is withdrawn. The injection ought to be kept in the meatus about three or four minutes.

The auricle is then to be wrought backwards and forwards, and sometimes elongated, and

by these means the wax will be loosened from the sides of the meatus.

Another syringful of tepid water should then be thrown inwards, with more force than the preceding; and this latter injection usually issues out more or less tinged with wax, and frequently brings along with it small bits of that substance, tough and hardened.

In this manner the operator must proceed with the tepid injection, until the meatus be cleared of the whole of the wax, and the sides of the tube, and the membrana tympani be visible on inspection. In some instances the wax acquires a degree of hardness and tenacity, which would scarcely be credited by those who are unacquainted with the diseases of the ear.

In these cases, the injection though thrown in frequently, yet seldom (for a length of time at least) forces out the chief cause of complaint, which on inspection is found to consist of one

solid mass of hardened wax ; which if it should be loosened, or partially reduced by the repeated ablutions, is perhaps only removed from its original position to be fixed in the middle of the tube, where it bids defiance to the streams of tepid water which issue from the meatus. It is therefore sometimes necessary to apply the auricular forceps to extract these hardened masses, when they are near the mouth of the tube.

It may perhaps appear strange on the first view of the subject, that after repeated and apparent solution of part of the mass, that it should *still* be so large as to resist the power of the counter current of the injection.

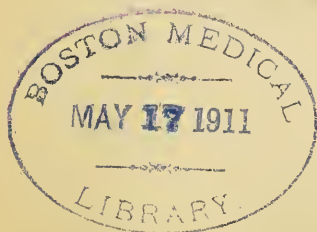
But let us review the dimensions of the internal parts of the meatus, and the difficulty will soon be cleared up.*

The space usually occupied by the indurated

* See the plate of the anatomy of the parts in the 'Guide to Acoustic Surgery,' and plate IV of this work.

mass, is close to, and upon the membrana tympani, which membrane lies at an angle of nearly 45° from the central line of the tube; and likewise, that the inferior and interior part of the meatus makes a circular sweep and turns rather upwards, so that it increases considerably the bounds of this part of the tube, and at the same time allows the membrana tympani to be of greater magnitude, than if it had been formed at a right angle with the central line. It is in this depression, formed by the circular bend of the meatus, where the cerumen usually forms its nucleus, and afterwards accumulates slowly, but progressively, so as to stretch across and seal up the tube.

It will therefore be no longer matter of surprise to the reader, that although part of the mass should be dissolved by means of the tepid injections, yet it may be still so large as to resist the counter current of injection, until finally dissolved or extracted.



The irritation caused by this accumulation of wax excites the cerumenous glands to more active secretion than usual, and by that means an additional layer is soon formed to the already enlarged substance.

It is in this manner that we are able to account for the enormous quantities of indurated wax, which has at various times been extracted from the ears of patients.

By long and continued irritation from the now hardened cerumen, the parts become inflamed; and if proper treatment be not adopted, absorption, and frequently ulceration of the integuments, and sometimes of the membrana tympani itself, are the consequences of neglect, or ignorance of the nature of the disease.

If the mass should be so large (after having been removed from its original position) as to block up the mouth of the tube, I have frequently found that an instrument of the following des-

cription has extracted the cause of complaint, and with the greatest ease when lying near the orifice of the tube.

The blade is made of a thin narrow plate of silver, somewhat shaped like a writing pen, but not quite so taper at the point.

The handle is about four inches in length, of an octagonal figure, and made of ebony, or mahogany stained black.

The point of the instrument, (which may be termed an Extractor,*) should be gently insinuated between the cerumenous mass and the parietes of the meatus, and the handle slightly depressed according to circumstances, so that the wax may be removed from the tube.†

* See plate III, figure 3rd.

† Infants are sometimes rendered deaf by the accumulation of viscid wax in the meatus, which being allowed to remain and block up the tube, prevents them from hearing, and consequently from acquiring the use of speech.

The meatus should then be washed out with an injection of tepid water, and afterwards a few drops of Ol. Amygdal. poured into the tube, which will prevent any bad effects from the accession of atmospheric air to the irritated surface of the meatus.

And this method should be invariably followed every time that the parts have been washed out with injections of tepid water; unless, when the practitioner intends to apply a medicated injection, which is sometimes necessary when the parts appear in a state of inflammation or ulceration.

For this purpose I would recommend that the injection, [Formula No. 2,] be thrown into the meatus, morning and evening, until the parts are healed.

It is therefore necessary that the meatus in children should be inspected immediately after birth, and if any wax or adventitious matter be found to obstruct the tube, the passage to the membrana tympani ought to be rendered pervious by means of the tepid injections.

The bowels ought at the same time to be kept open with a saline purgative.

The species of deafness or diminution of hearing, arising from indurated wax, is the most frequent, and at the same time admits of the most easy mode of cure of any species of disease which affects the auditory organs.*

* If the practitioner be acquainted with Acoustic Surgery, he should therefore be able to form a correct prognosis of the complaint immediately after inspection.

CHAP. VI.

On diminution of hearing arising from imperfect secretion of wax.

THE treatment of this disease requires discrimination and perseverance in the practitioner, for the least irregularity of the patient frequently causes a relapse, which is more to be dreaded than the original complaint.

Patients who are affected with diminution of hearing, arising from imperfect secretion of wax, complain of noises—of a dry rustling sound, resembling that of blown-up bladders rubbing against each other, particularly during mastication—sometimes ringing noises in the head:—there is no acute pain in the organ, but often a dull sensation—at times a total remission of all the above symptoms.

Patients of this description are usually of a cold, thin, costive and often bilious habit; and the glandular system is apt to become diseased on being exposed to the least change of temperature in the atmosphere.

As this disease is often symptomatic of other constitutional affections, so it is therefore requisite not only to inspect the parts, but to ascertain if possible, the primary cause of the complaint, whether local or general; and minutely note down the symptoms, age, constitution and habits of the patient, and the diseases to which he may be liable from these circumstances, before the practitioner proceeds to prescribe for the patient.

In the "Synoptical Table of the Diseases of the Human Ear" this complaint forms the *Genus Imperfectum*, which is divided into three species: viz.

1st—When the wax is deficient in *quantity*.

2nd—When deficient in *quality*, and

3rd—When deficient both in *quantity* and *quality*.*

In the *first species* the secretion of wax is sometimes so extremely small in quantity, that it is only by a full view and careful inspection of the parts that the secretion can be ascertained to exist; and even then it is seen merely to tinge slightly the interior parts of the meatus: but however small the quantity may be, the quality is good. Patients who are affected with this species usually hear tolerably well in clear fine weather, and when the general health is good, but are apt to be affected with the least irregularity of the atmosphere, which, when dull, moist or cloudy, causes considerable diminution of hearing.

As the acuteness of hearing is generally restored on the change of the weather, the pa-

* The particular species may always be determined by a careful examination of the meatus.

tient pays little attention to the symptoms, perhaps for a number of years, until the disease becomes so far confirmed that he is sensible of great diminution of hearing, at times approaching to deafness. He is then alarmed, and applies for medical assistance, which, if not immediately successful, often causes great uneasiness, which tends to retard the cure.

In the *second species* the secretion is more plentiful than in the first, but frequently so, altered in colour and quality, as to form two varieties, viz.

1st—When it is of a whitish colour and thin—similar to a solution of gum acacia.

2nd—When only a few of the glands secrete the cerumen, so that we often find small patches of insulated wax distributed in the interior parts of the tube, of a rather darker colour than the healthy secretion.

This variety has a peculiar tendency to harden; and when the secretory powers of the glands are active the cerumen forms into distinct lumps, but generally in one large mass.

When diminution of hearing proceeds from indurated wax, the interior part of the meatus is almost always found blocked up with one large mass; but yet we find that a small quantity of secretion similar to the second variety will sometimes considerably diminish the hearing, especially when it lies close to, or upon the membrana tympani.*

In the *third species* the tube is found clean and dry; and if the meatus can be inspected so as to obtain a full view of the parts, the membrana tympani will appear clear and shining. The meatus is also liable to be affected with scurvy, when the cuticle frequently becomes so dry as to be easily detached in small pieces, simi-

* For an account of the formation of indurated wax see page 50.

lar to the scales of a fish. The integuments are sometimes swollen, and of a reddish blue colour.

In some subjects the tube is found so thickly studded with strong hairs as almost to choke up the passage to the membrana tympani: the cuticle in these cases is in general dry and scaly. This species is often connected with the *Genus Infirmitum*, or nervous debility of the organ, and frequently terminates in that complaint from injudicious treatment.

In these three species which we have enumerated the cerumenous glands are diseased; and the general indication of cure seems to be—to restore them to their healthy action.

The *first species* admits of the most easy mode of cure: viz. to increase the action of the glands in the meatus, and of course the quantity of the secretion.

For this purpose warmth and stimulant applications will be of considerable service.

Two 'drops of Formula, No. 4, ought to be applied to the interior parts of the tube every night at bedtime, and a table spoonful of the mixture [Formula, No. 5,] should be taken at the same time.

The state of the bowels ought to be carefully watched, and if the patient be costive, the *Pilulæ Rhei. C.* should be taken in such quantities as to obviate this circumstance and assist the powers of digestion.

In the *second species* the quality of the secretion must be altered, and often the quantity augmented likewise; for we find that when the secretion is diseased the quantity is frequently deficient. The practitioner should not only extract the insulated wax, but endeavour to excite healthy action in the glands of the tube; for although the patient feels considerably relieved when the deranged secretion is removed, yet it is again speedily produced, and the acuteness of hearing gradually diminishes.

The *third species* sometimes arises from bathing with the meatus exposed to the influence of cold water, either salt or fresh, but more frequently the former.

I am apt to think that it may not be so frequently caused by the water *alone*, as reported, but may be chiefly owing to the patient having been in a state of perspiration at the time when he plunged into the sea; and the water having then free access to the membrana tympani, with the sudden check given to the perspiration, may so deprive the parts of their portion of the circulation, and consequently of the power of secretion, that the *meatus* may have become dry and afterwards insensible to ordinary stimuli.

Diminution of hearing ultimately follows this torpid state of the tube, which progressively communicates its baneful influence to the tympanum and surrounding parts, unless its progress be timely arrested by judicious treatment.

I have sometimes traced this species in females to a sudden check given to menstruation, which usually rendered the hearing very imperfect.

In the treatment of the second and third species, great care must be taken that the chylipoetic viscera be in a healthy and active state; and for this purpose, the mixture [Formula, No. 10,] should be taken regularly once or twice a day.

The patient must be kept in airy dry lodgings, free from marsh effluvia, or exposed to sudden changes of temperature.

When the atmosphere is dry and clear, and the bowels regular, the hearing is more acute than in moist weather, and the patient more susceptible of the impression of the undulations of sound, especially if he has been taking exercise in the open air.

It is for this reason that walking or riding,

so as to cause a gentle perspiration, will be found very beneficial in promoting the action of the glandular system.

The warm bath ought to be used at bedtime once or twice a week, with the powder [Formula, No. 7,] to be taken immediately after getting in bed.

The patient should avoid sitting in a damp room, or without a fire; and ought if possible to keep the body in exercise during the day.

As any sudden change of temperature is apt to affect the patient, especially from a dry to a moist atmosphere; so he should therefore be particularly careful not to expose himself to the evening dew in summer or autumn, or to lie down on the moist grass, for any sudden check to the perspiration may occasion very serious effects on the secretive powers of the ceruminous glands.

I have known several instances where the *third* species has arisen from the patient having been exposed suddenly to cold moist weather, when the system was under the influence of mercury for the cure of syphilis, and where this diminution of hearing resisted various modes of treatment until the system was brought into the same state as when the irregularity took place, which ultimately effected a cure.

The injection [Formula, No. 2,] should be used every second or third day, in order to stimulate the action of the cerumenous glands.

When the practitioner wishes to stimulate the parts, the injection ought to be made every time it is applied, and the point of the syringe held at the distance of about five or six inches from the auricle. The fluid should then be forcibly injected into the meatus, and, by this means effervescence will take place, which if confined to the tube will produce more beneficial effects than ten times the quantity of the same fluid *poured* into the meatus.

The meatus might also be fumigated with the mixture [Formula, No. 6,] three times a week, just before the patient goes to bed in the evening.

The fumigation might be performed by means of a glass retort, with a long slender neck; but great care ought to be taken that the heat be not applied too suddenly to the retort, and also, that the vapour be not allowed to enter into the meatus at so high a temperature as to cause a disagreeable sensation of heat.

The orifice of the tube ought to be afterwards stopped with a little cotton, and the patient be allowed to sleep in a woollen night-cap.

The feet should also be washed in warm water, and about a pint of white wine whey drunk in bed, where the patient ought to lie rather longer next morning than usual.

This mode of treatment should be continued for some time, but not carried so far as to

debilitate the system: on the contrary, the diet ought to be light and nourishing, with a glass of port wine or spirits after dinner.*

The mind should be kept easy; and if the patient be of age to admit of appearing in a ball-room, the amusement of dancing may be allowed, in order to strengthen the system and promote the secretions; at the same time, great care ought to be taken in order to guard against the effects of any sudden exposure to the atmosphere.†

* Blisters of a semilunar shape applied behind the auricle, have sometimes been of considerable benefit. The Formula, No. 12, might be used alternately with the blisters.

† Various preparations have been used as stimulants in this complaint, and at times with considerable success: but in the application of medicines of this description to the external tube of the ear, care ought to be taken that the preparations should not irritate the parts, so as to cause inflammation, or render the meatus callous by too frequent repetition of the stimuli.

CHAP. VII.

On Polypi in the Meatus.

THIS is a disease which frequently takes place subsequent to inflammation of the meatus; especially if the patient be of a delicate or scrophulous habit, and has been exposed to a cold moist atmosphere.

The recent polypi consists of a soft, spongy, reddish coloured substance, lubricated with a thin fluid, secreted by the diseased cerumenous glands, and the excrescence.*

In process of time the tumour acquires a considerable degree of tenacity, as well as density in its structure; and instead of that thin

* The cerumenous glands are generally found diseased when polypus excrescences exist in the meatus or tympanum.

secretion which we find in the early stage of the disease, it is in general accompanied with purulent matter.

When the tumour has existed for a considerable time, without any attempt having been made to arrest the progress of the disease, it will be found, on inspection, to be deprived of its cuticle, except on the extremity exposed to the influence of the atmosphere, which becomes considerably hardened; the remainder of the body, and the neck of the tumour consisting of ulcerated surface. The ulceration is caused by the excrescence lying constantly in contact with the fluid secretion in the meatus, so that even this germ of disease becomes more unhealthy and contaminated than formerly, from the want of cleanliness.

The shape of the tumour, in general, has a considerable resemblance to that of a pear; the stalk of the fruit representing the cervix of the excrescence by which it is connected to the

parietes of the tube, or sometimes to the edge of the membrana tympani. Although this is the most general form of the tumour, yet it is often found without any neck,—the origin being then as large as the body, and in some instances considerably larger, so that the excrescence in that case assumes a conical figure. There is only one complaint to which the meatus is liable, that may be mistaken for polypi, and that is, tumefaction of the cerumenous glands.

These glands are sometimes so much enlarged that the meatus is completely blocked up, and the patient rendered deaf during the continuance of the complaint. When the parts are in this state one or two of the glands are generally more enlarged than the others, which gives them the appearance of a polypus tumour.

In order to ascertain the nature of a complaint with these appearances, (should inspection fail) the practitioner ought to endeavour to introduce a probe around the enlargement, and if it be

polypi the probe will pass freely around the tumour.

But if he be unable to pass the probe, except on one side of the tumour, or in the centre of the meatus, and the enlargement be dry, extremely tender to the touch, and the surrounding parts participate in the swelling and inflammation, he may then be assured that the disease is not polypi, but tumefaction of the glands and integuments of the tube.

Polypi may sometimes continue in the meatus or tympanum for a number of years, without causing any derangement in the system, except deafness and ulceration of the parts.

In a case which came under my care, the disease had existed upwards of seven years previous to the time that I saw the patient. He had a polypus tumour in the meatus of each ear, which had so effectually plugged up the respective tubes, that he was completely deaf—so

much so, that when beating the leather, (which he used as a shoemaker) on a stone laid on his knee, he was unable to hear the noise of the hammer, even when he struck the stone on purpose.

It ought to be mentioned that various modes of treatment had been tried during the seven years previous to the time he came under my care, except that which would have been most likely to cure the patient, viz. extirpation of the tumours. Lotions and medicines innumerable had been applied and taken without procuring the desired relief. To their effects in preserving the cleanliness of the parts, I attribute the preservation of the mechanism of the ear, which I found so far entire that I enabled him to converse (for a short time) with his wife and friends. I had every prospect of completing the cure, when the patient fell into difficulties, and was by that means unable to attend to the instructions laid down. The consequence was, growth of the tumours, and relapse of deafness.

Polypi in the meatus is at all times a formidable disease, but more so when accompanied with ulceration of the surrounding parts: and although cases such as the above may be found on record, where the tumour has existed in the tube during a number of years, without destroying the membrana tympani or the ossicula auditus, when the parts have been kept clean; yet it is seldom that polypi attended with purulent discharge, has continued in the meatus any length of time without injuring the organ beyond the possibility of effecting a complete cure.

If such be then, the destructive nature of this insidious disease, and that sooner or later the slow but sure process of ulceration undermines the healthy state of the organ,—surely it becomes an imperious duty on every practitioner to endeavour to annihilate this excrescence as soon as the situation and size of the neck of the polypi can be ascertained.

The best method of destroying polypi in the

meatus, (in my opinion) is, to extract it by the root, by means of forceps, and afterwards touch the parts with an escharotic or stimulating application.

Some practitioners prefer caustic instead of the forceps; but when the tumour is large and subjected to this mode of operation, the process is tedious, the pain often excruciating; and besides these disagreeable circumstances, the surrounding parts generally suffer from the destructive power of the caustic.

It is for these reasons that I prefer the mode of extraction by the forceps; and for this purpose I have been in the habit of using a small pair slightly curved, similar to those of plate III, fig. 5.

With this instrument I can lay hold of the neck of the tumour more readily than by any other means. Before endeavouring to extirpate the polypi, it will be necessary to ascertain

exactly the situation of the origin of the excrescence: and for that purpose a careful examination of the parts will be absolutely necessary. The inspection may be accomplished in the rays of the sun, or by means of the inspector auris, and the auricular probes.

When the site of the origin of the polypi has been accurately ascertained, and the patient seated as directed in the other operations of the ear, with the head well secured, the operator should then lay hold of the auricle with the left hand, and bring the meatus in a line with the rays of the sun, or those emitted by the inspector auris; and with the forceps in his right hand he should then introduce the instrument cautiously into the tube (with a blade on each side of the tumour) until he has got hold of the cervix.

He should then grasp the forceps firmly, and give the instrument a half turn, and at the same time pull towards him; and by this means the tumour will in general be torn from its origin and conveyed out of the meatus.

The recent polypi is extremely vascular, exhibiting a congeries of blood vessels, so that if the operator in his effort to extirpate the excrescence extract only part of the tumour, the meatus will be immediately deluged with blood: a circumstance very apt to alarm the young practitioner.

I have seen a patient lose nearly five ounces of blood from the ear, after the operation, which instead of debilitating the system, gave considerable ease—relieved the patient from a painful affection of the head, and ultimately accelerated the cure.

The length of the meatus and site of the neck of the tumour, ought always to be measured, and marked on the forceps with ink, which will assist to guide the surgeon in the operation, especially when the polypi may be so large as to fill the tube.

The meatus should afterwards be washed out every day, with the injection, [Formula, No. 2]

and if there be any appearance of the reproduction of the tumour, the parts might then be touched with an escharotic, laid on the point of a camel hair pencil. The Ungt. Hyd. Nitrat. or the Tinct. Ferri. Muriat. does very well, when carefully applied.

It is almost needless to add that the patient should be confined to his room until the completion of the cure.

In recent polypi I have frequently succeeded in destroying the excrescence by touching the tumour slightly with a camel hair pencil dipped in the Tinct. Ferri. Muriat. renewing the application once a day until it was destroyed, and afterwards dressing the parts with a dossil of lint, smeared over with Ungt. Hyd. Nitrat.

The mixture, No. 1, was taken regularly three times every day during the cure.

In regard of extirpating polypi by ligature,

the diameter of the meatus is really so small in most subjects, that an instrument adapted fully to the purpose of applying the ligature to the neck or base of the tumour, could scarcely be introduced into the tube, if the excrescence were of any size.

And if the polypi were so small that the cervix could be easily seen on inspection, the forceps would appear to me to be still better adapted in that case, than the ligature—from the simplicity of its construction and facility in application.

CHAP. VIII.

On the treatment of purulent discharge from the meatus.

It is seldom that the practitioner is called in on the first appearance of symptoms of inflammation of the meatus: the disease is generally left to the lenient hand of time, and if no amelioration take place, popular remedies are used for the purpose of giving ease, which, though sometimes of the most acrid nature, yet from prejudice are often applied to the parts, without regard to the feelings of the patient.

I have known *aqua ammonia*, *brandy*, and other irritating fluids poured into the meatus of the hapless patient, which caused immediate pain, succeeded ultimately by ulceration of the parts.

For this reason it will be necessary that the surgeon should on his first visit enquire minutely into the symptoms—if any attempt has been made to relieve the patient—and the remedies, if any, that have been used—and immediately after obtaining the necessary information, inspect the parts in the rays of the sun, or by means of the inspector auris.

Inflammation of the meatus is frequent in children during the time of teething: and in all instances where I have obtained a regular history of the case, irritation, particularly that which arises from exposure to the atmosphere, seems to have been the original cause of the complaint.

In the Synoptical Table of the Diseases of the Human Ear, *inflammation* of the *meatus* is classed in Order I. Genus *Inflammatum Externum*, of which there are three species: viz.

1st—*Inflammatio Auditu Permanenti*,
pain, without diminution of hearing.

2nd—*Inflammatio Diminuto*, pain, with diminution of hearing.

3rd—*Inflammatio Suppurata*, pain, with diminution of hearing, accompanied with discharge.

In the above classification I have avoided enumerating inflammation of the auricle, because the treatment of inflammation in that part of the external ear is similar to that of any other extremity.

It may perhaps be thought that these three species ought to have been termed stages of the disease; but as I have frequently met with instances of severe pain in the meatus, when the patient was in the full possession of hearing; and although it may have terminated in suppuration, yet no perceptible diminution of hearing took place during the treatment of the complaint.

I have likewise met with cases of inflamma-

tion of the meatus accompanied with diminution of hearing from the beginning; and have also met with other cases where there seemed to be so little interval between the symptoms of pain *without* and *with* diminution of hearing, and the formation of purulent matter, that I have been induced, from a knowledge of these circumstances, to enumerate three species of this genus.

As the mode of treatment directed for the cure of the first and second species is nearly similar, this distinction can have no bad effect on the indication of cure.

SYMPTOMS. The symptoms, in the *first species* are few: namely, tenderness of the parts—uneasy sensations in the meatus, accompanied with a greater or less degree of pain, according to the state of the inflammation.

In the *second species* the pain is generally more acute than in the first, and accompanied with diminution of hearing—meatus reddish

coloured—integuments and cerumenous glands swollen, so as to contract the diameter of the tube, the orifice of which is sometimes almost impervious. The closure of the meatus is caused by the tumefaction of the cerumenous glands and integuments.

In the *third species* the symptoms are in general not quite so severe as in the first or second; but there is a discharge of purulent matter, in addition to pain and uneasy sensations in the meatus.

The pulse is in general quicker than usual, accompanied sometimes with rigors and other symptoms of fever, which quickly subside on the formation of matter; but if the patient be costive these symptoms are heightened, with general uneasiness and pain in the parts.

The cerumenous glands participate in the change, and the secretion is gradually altered into thin, yellowish matter—sometimes of a

greenish hue; and if the discharge should continue for a length of time, without any attempt being made to relieve the patient, it soon acquires a fetid, disagreeable smell; erosion of the integuments takes place, and great part of the tube is converted into an ulcerated surface.

The discharge accumulating and lodging in the interior depression of the tube, sometimes causes a considerable diminution of hearing, especially in patients of a scrophulous diathesis, where the matter is in general thick and curdled, or thin, acrid and mixed with blood.

CAUSES. Irritation, of whatever kind, if applied to the meatus, is apt to cause inflammation of the parts—accidents from extraneous bodies, or forcible extraction of these bodies—exposure to cold, especially if the patient be of a delicate or scrophulous habit, will all, or either of them excite inflammation.*

* The disease sometimes arises from a herpatic affection of the tube; which, when in its incipient state might have been easily cured by astringent injections, but owing to

TREATMENT. The indication of cure in the *first species* will be, to alleviate the pain and subdue the inflammation; and for this purpose from ten to twenty leeches ought to be applied to the parts around, and posterior to the auricle; and the mixture [Formula, No. 1] should be taken regularly. At night the pediluvium will be found of great service, especially if the powder [Formula, No. 7] be taken at the same time.*

In all cases where the inflammation is high, it will be necessary to confine the patient to his room until the cure be completed.

In the *second species* we often find that the cerumenous glands are so much enlarged as to exclude the pulsations of sound from reaching

neglect, or imperfect treatment, the thin matter exuding from the pustules accumulates in the meatus, ulceration of the parts is induced and speedily followed by discharge of purulent matter.

* The patient should also lose from ten to sixteen ounces of blood from the arm, according to the severity of the symptoms.

the membrana tympani: hence the patient complains of deafness, or at least of great diminution of hearing in the ear affected.

This affection of the meatus sometimes resembles that of polypi, but the precise nature of the complaint will be easily known by following the directions given in page 70 of this work.

After the parts are inspected, and the disease ascertained to proceed from tumefaction, insert a pledget of lint cautiously into the meatus, so as to distend the aperture, and by that means cause pressure on the glands, and consequently absorption of the tumefaction and induration.*

The insertion of the pledget will perhaps need to be renewed each morning successively during five, six, or even sometimes ten days; at the end of that time the meatus will in general be found of its natural diameter.

* The pledget should be smeared over with the Ung. Cetacei, in order to prevent it from adhering to the sides of the tube.

If the pressure be considerable, it will also have the good effect of preventing the formation of sinuses between the integuments and the osseous part of the tube.

A piece of Gum Catheter might sometimes be applied instead of the lint pledget, and by this means the undulations of sound will have ready access to the *membrana tympani*.*

Injectsions of tepid water, or infusion of poppies should be applied to the meatus three or four times a day, which will contribute towards alleviating the pain, which is frequently excruciating.

In addition to topical and general bleeding, I have uniformly inserted a seton in the back of the neck, which assists powerfully in removing the inflammation from the meatus.

The mixture [Formula, No. 1] must be taken

* I have used a portion of Gum Catheter in similar cases with the best effect:

freely, and continued every four hours, until all symptoms of inflammation and tumefaction disappear ; after which period, to be repeated once or twice a day during a week subsequent to the cure.

When active means are used at the beginning of the complaint, there will be less danger of the inflammation extending to the tympanum, and by attention to the above mode of treatment the *first* and *second* species will be easily subdued. But as we formerly remarked, the practitioner is frequently not called in until a discharge of matter has taken place ; it will then be necessary for him to wash out the tube by means of injections of tepid water, so that when an attempt is made to inspect the parts, the view may not be obscured by purulent matter.

In the treatment of *Inflammatio Suppurata* we must endeavour to heal the discharge as soon as possible, in order that the surrounding parts may not be endangered by the collection of matter.

On reviewing the anatomy of the ear* we find that the meatus forms part of the segment of a circle, the interior part of which is rather depressed.

Now if active means be not speedily adopted to heal the ulcerations from which the discharge proceeds, the purulent matter lodging and accumulating in the depressed portion of the tube, will not only cause diminution of hearing, but will irritate the membrana tympani: inflammation and ulceration of the membrane will take place, and disease of the tympanum follows, in consequence of a palliating and defective mode of treatment.

The cure of these ulcerations should therefore be the first object of the practitioner.

* See "Guide to Acoustic Surgery," page 11, and the plate of the External and Internal parts of the Organ of Hearing, and likewise plate IV of this work.

In recent cases of purulent discharge from the meatus, accompanied with pain, the tube should be washed out with injections of tepid milk and water four or five times a day, and the mixture [Formula, No. 1,] taken at the same time.*

Few cases of recent discharge will resist this mode of treatment, when carefully and regularly continued, if the patient be confined to his room; but if he should be exposed to the influence of cold raw weather, or to the night air, when he is in the habit of having the meatus syringed with tepid injections, the consequence of such neglect may be—violent inflammation of the parts, and extension of the disease to the tympanum.

* The membrana tympani becomes sometimes thickened and relaxed, from being constantly in contact with the matter lying in the interior curve of the meatus, and this induration and relaxation is frequently the cause of diminution of hearing even after the discharge is healed; it is therefore absolutely necessary that the injection used should be applied frequently, in order to prevent this disagreeable consequence.

If the patient be so situated that he cannot avoid being exposed to the weather, the tepid injection ought then to be discontinued, and either of the Formulæ Nos. 13, 14, or 15, applied three times a day, and Formula, No. 1, taken regularly to keep the bowels open and induce a slight purging.

He should also be placed under antiphlogistic regimen during the cure, and likewise continue the injections several days after all the symptoms have disappeared.

When there is considerable diminution of hearing, as well as purulent discharge, I frequently give the Formula No. 9, until the system is partially affected.

Such was the general practice which I followed in the treatment of purulent discharge from the meatus, until induced to try the effect of other remedies (with those patients who were treated gratuitously) from the following circumstances.

Although I succeeded frequently in removing the various symptoms of *Inflammatio Suppurata* by the above mode of treatment, yet in many instances the patients grew tired during the time necessary to effect a cure,—particularly if the hearing were not improved, which from exposure to the atmosphere, and the use of tepid injections was too frequently the case with several.*

To add to the state of matters the discharge frequently returned, when the system was under the influence of calomel: the patients became alarmed, and afraid that no permanent cure of their disease could be effected.

It was therefore necessary that I should exhibit a medicine which would be more efficacious than the one mentioned above, and after due consideration I was induced to try the stimulating

* Great part of the following observations relate chiefly to patients in the Hull Dispensary for Diseases of the Eye and Ear, who had to attend to their respective employments in order to support themselves, and by this means were exposed to all the vicissitudes of the atmosphere,

effects of Iodine in cases of discharge accompanied with diminution of hearing.

The form to which I gave the preference was that of the mixture, Formula No. 8, which answered extremely well in several cases.

To scrophulous patients affected with diminution of hearing after healing the ulcerations in the meatus,* or during the cure of these ulcerations, the Iodine mixture promises to be a most valuable acquisition to the present list of extemporaneous prescriptions,—at least I have frequently found it so after repeated trials of Calomel had failed.

I by no means wish to underrate the properties of Calomel, which in many cases of the above description has the very best effect in curing the disease:—I only beg to remark, that a due

* The discharge in these cases was cured by strong astringent injections.

discrimination ought to be made before applying the respective stimulants.

There are some constitutions so extremely irritable, that a few grains of Calomel will produce sickness and ptylism to a very alarming degree: it is with patients of this description that the Iodine will be found to produce the most beneficial effects.

Although I had succeeded in the application of the Iodine as a stimulant in curing the discharge in persons of irritable habits, yet as most patients are desirous of *immediate relief*, I had still a desideratum to obtain: namely—a medicine that should cure the discharge in a moderate space of time, and restore the hearing *instantaneously*.

After a careful investigation of the properties of various medicines, applicable to the treatment of Inflammatio Suppurata; and after watching their effects on patients affected with this disease, I was so fortunate as to find one, which though

extensively used for mercantile and chymical purposes, had as yet never been administered for the cure of diseases of this organ.

In a very obstinate case of purulent discharge from both ears, with considerable diminution of hearing, that had been submitted to a variety of medicines, without any permanent benefit, I was induced to try a weak mixture of Pyrolignous Acid, in the form of an injection, and found it to surpass my most sanguine expectations in diminishing the discharge, and almost *immediately restoring the hearing*.

In a few days the patient (a female) on whom the experiment was made, was agreeably surprised to find that she could distinguish whatever was spoken to her, though pronounced in the softest whisper. The discharge was entirely divested of its fetid smell, and gradually diminished in quantity, and the patient was relieved from a very disgusting and offensive complaint.

I have made repeated trials of this injection, and find it succeed in restoring the hearing in every case of purulent discharge, accompanied with diminution of hearing ; and I may venture to say that a more valuable medicine than that of Pyrolignous Acid has not been introduced into acoustic surgery either in this or the last century.

I had some thoughts of giving the history of a number of cases, in which the hearing was restored by the application of this valuable medicine but shall at present relate only the following.

G. E., Esq., 56 years of age, applied to me for relief. He had great diminution of hearing in the right ear, attended with purulent discharge from the meatus of both ears, and had been deaf of the left upwards of 42 years. He could not hear with the right ear unless when using an ear-trumpet ; and even then the person speaking had to bawl aloud in order to be heard. After inspecting the parts I applied the injection [For-

mula, No. 2] to the right meatus, in the manner described in page 65, and immediately afterwards he heard me when I spoke to him in a low soft tone of voice.

Two gentlemen who were in the room at the time, and saw the injection applied, were astonished at the effects of the medicine.

On the third application of the injection to the left ear he heard the beating of a watch with it, which he had not done before for the space of 41 years, except once when a few drops were poured into the meatus two or three years prior to this period.

Miss F., 19 years of age, had purulent discharge from the meatus of both ears, with considerable diminution of hearing, upwards of 14 years. By the application of the injection once a day, and taking the *Pil. Rhei. Comp.* of the *Edinburgh Pharmacopœia*, in about three weeks

she became more acute in hearing than she had been during any period of her life.

E. R., 13 years of age, had considerable diminution of hearing, accompanied with purulent discharge from the right meatus, which had continued upwards of eight years. On inspecting the parts, found the meatus filled with purulent matter of a darkish colour, with a strong, fetid, disagreeable smell. After the tube had been washed and cleaned with tepid water, saw the membrana tympani, and ascertained that the discharge proceeded from the interior parts of the meatus. I immediately applied an injection of fifty drops of Pyrolignous Acid in six ounces of distilled water, twice a day, and ordered the mixture [Formula, No. 1] to be taken regularly twice a day.

In three days the hearing was restored, the discharge diminished, and the little which was secreted entirely divested of its disagreeable

smell. A few days afterwards, a small polypus tumour made its appearance near the edge of the membrana tympani, when I increased the strength of the injection to four drams of the Acid to six ounces of water, This injection checked the growth of the excrescence, and in a few days it disappeared.

As the meatus continued to discharge a little matter, I gave the Iodine mixture twice a day, and applied the injection [Formula, No. 11] and in three months from the period of application the patient was cured.

In the Formula, No. 2, will be found the usual strength which I make the injection on its being first applied to the meatus; but either augment or diminish the quantity of Acid according to the feelings of the patient.

The best mode of applying this medicine is, to wash out the parts with an injection of tepid water, before using the medicated injection, and

by that means the meatus will be divested of purulent matter, and whatever properties are possessed by the injection will then be directly applied to the abraded or ulcerated surface of the tube.

By means of tepid injections I have frequently brought away large pieces of the integuments of the meatus, which were thickened, hardened, and partially detached from the osseous parietes of the tube. I have at present some pieces in spirits, upwards of a line in thickness, which I removed by the above mode: hence the utility of washing out the meatus with tepid water (when ulceration of the parts has taken place) previous to the application of medicated injections.

The effects produced by this medicated injection, are giddiness, succeeded in a few minutes by an agreeable warmth, sensation of lightness in the head, and the patient is in general surprised to find his hearing suddenly restored.


Sometimes the injection operates so powerfully as to cause the blood to flow from the extremities of the small arteries distributed in the ulcerated integuments.

If the meatus should become irritable from the effects of the injection, a few grains of the Plumbi. Acet. may be added in the proportions mentioned in Formula No. 11, which will in most instances allay the irritation. The practitioner may perhaps think that the Formula, No. 2, which I have given for the preparation of the injection is rather weak; but from the irritability which sometimes exists in the meatus of patients, I think it always preferable to begin with a weak injection, and afterwards increase it according to circumstances.

When applying astringent or stimulating injections to the meatus, the bowels should always be kept open, and the digestive organs gently stimulated. And for this purpose I have met with few articles in the *Materia Medica*

which suit so well as the mixtures of Formulæ Nos. 1 and 10, in the proportions prescribed. The good effects which they produce on most patients who take either of them regularly, are observable in a few days, particularly in those of a scrophulous habit, who are found to be in the proportion of eight tenths of the number of patients affected with purulent discharge from this organ.

By means of these mixtures the bowels may be kept regular—the appetite restored, and even stimulated to the meridian of health—in short, the whole nervous system may be invigorated, and the mind relieved from the dejection usually attendant on this disease, which when aided by the stimulating powers of the injection, so as to recover the valued but diminished hearing, will render the situation of the patient truly delightful, inasmuch as he is restored once more to domestic happiness, and to the pleasures of society.



FORMULÆ.

No. I.

R. Sulph. Mâgnes. ʒiiss.

Quassia Lignum. ʒi.

Aq. Bullient. f. ʒvi. post horam

Colat. ft. Mistura, cujus capiat Cochl. ij. quartis horis.

No. II.

R. Acid. Pyrolig. ʒij.

Aq. Distill. f. ʒvi. M.

ft. Injectio, bis in die applicanda.

From several experiments which I made since writing the early part of this work, a silver syringe appears to be better adapted for applying this injection than those made of bone or ivory. Animal substance is easily corroded and spoiled by the Pyrolignous Acid which is contained in the injection, but on silver it makes no impression.

In order to ascertain this fact I immersed a shilling into three ounces of Pyrolignous Acid, where it remained upwards of four months, and when taken out of the Acid no appearance of corrosion could be discovered. But when I applied the injection to the meatus with a bone syringe, the point of the instrument was corroded and rendered unfit for use in the space of a few weeks.

In the new edition of the London Pharmacopœia, where this Acid is introduced into the Materia Medica for the first time, it is termed '*Acidum Aceticum Fortius*'; but as this appellation formerly designated common vinegar, and as the Pyrolignous Acid appears to possess qualities superior to that of any Acetic Acid with which I am acquainted, the term Pyrolignous, by which it is best known, is therefore retained in order to prevent mistakes.

When the indication is merely to dry up the discharge, the following injection may be applied

to the meatus four or five times a day with considerable effect.

R. Catech. Ext. gr. xii.

Aq. Bullient. f. ℥vi. M. ft. Injectio.

No. III.

R. Nicotian, Tabaci. ʒi.

Aloe. Spic. Ext. gr. x.

Aq. Bullient. f. ℥x. post horam

Colat. ft. Injectio.

No. IV.

R. Acid. Pyrolig.

Spts. Æth. Sulph.

Ol. Terebinthi. Rect. āā. M.

No. V.

R. Tinct. Colchi. ʒiij.

Aq. Distill. f. ℥vi. M.

ft. Mistura, de quo sumat cochl. ij. magna quartis horis.

No. VI.

R. Acid. Pyrolig.

Aq. Distill. āā. M.

ft. Mistura.

No. VII.

R. Pulv. Ipecac. C. ʒi.

Hydrarg. Submur. gr. ij. M.

ft. Pulvis, omni nocte sumenda..

No. VIII.

R. Tinct. Iodin. f. ℥i.

Mucil. Acaciæ. ℥ij.

Aq. Distill. f. ℥vi. M.

ft. Mistura, cujus capiat Coch. ij. quartis horis.

In the experiments which I made on the efficacy of Iodine in healing ulcerations in the meatus, none of the patients were affected with any of those distressing symptoms related by authors in their accounts of this medicine: it is however, necessary to add, that the bowels were kept open by means of Formula, No. 1, taken once or twice a week. The Gum Acacia would also tend to prevent irritation in the alimentary canal. I would, however, recommend that during the exhibition of the medicine, the patient be carefully attended, and visited at least once a day.

The following is the usual strength which I make the Tincture.

R. Iodinæ, gr. xx.

Spts. Recti. ℥i. M. ft. Tinctura.

No. IX.

R. Hydrarg. Submur. gr. xii.

Antimon. Tartariz. gr. i.

Opii. gr. iij.

Panis. ʒi.

Syrup. Cort. Aurant. q. s. M.

Fiant pilul. xii. quarum sumat æger ij. omni nocte hora decubitus.

No. X.

R. Quassia Lignum. ʒi.

Aq. Bullient. f. ʒvi. post horam

Colat. et adde,

Pulv. Rheī. ʒiss.

Magnes. ʒij.

Sacch. puriss. ʒss.

Ess. Menth. Pip. ℥ xx. M.

ft. Mistura, cujus sumat cochl. ij. terquaterve in die.

No. XI.

R. Plumbi. Acetas. gr. x.

Acid. Pyrolig. ℥ xx.

Aq. Distill. f. ʒvi. M.

ft. Injectio.

I have also used this Formula with the very best effect, as a Collyrium in allaying inflammation of the Tunica Conjunctiva in patients of an irritable scrophulous habit.

No. XII.

R. Ol. Sabinæ. ℥ss.

Antimon. Tartariz. ʒi.

Ung. Sperm. ʒij. M.

ft. Unguentum, omni nocte hora decubitus applicandum.

No. XIII.

R. Argenti. Nitras. gr. i.

Aq. Distill. f. ʒx. M.

ft. Injectio.

No. XIV.

R. Zinci. Sulphas. gr. iv.

Aq. Rosæ. f. ʒvi. M.

ft. Injectio.

No. XV.

R. Zinci. Sulph. gr. ij.

Plumbi. Acetas. gr. vi.

Aq. Distill. f. ʒvi. M.

ft. Injectio.

Strong injections cause pain, and for that reason are frequently laid aside by the patients, or

used only once a-day ; whereas injections ought to be applied four or five times a day if the matter accumulates in the meatus, and the concha should be carefully dried with a piece of fine lint after each application. But it ought to be observed, that the more frequently the tube is washed out, the weaker the injection should be made ; in order to avoid irritating the parts, or exciting inflammation in the tympanum.

Since writing the early part of this work, I have found it necessary to make the following alterations in the Inspector Auris, which will be a considerable improvement in that instrument. The perpendicular male screw *h* to be of the same length as formerly described, but of rather larger diameter, and detached from the ring, and to contain a hollow square cavity in the upper extremity, of about three inches in length. The ring *B* to be formed so as to have a dependent stalk of about three inches in length, of a

square form and a small shoulder so as to fit neatly into the square cavity in the upper end of *h*, with a screw nail to run through both parts, and secure them firmly together.

When a surgeon wishes to inspect the fauces or vagina of a patient who may be confined to bed and unable to be removed, it will be found very inconvenient to apply the Inspector with the standard, or even the screw *h* attached to the globe and tube, as originally designed.

But, by withdrawing the small screw nail, the instrument can be separated from the other parts of the apparatus, and with the help of an assistant it may be applied to such cavities of the body as the surgeon may judge necessary, and without inconvenience to the patient. A small standard of about four inches in height, and six in breadth, might be made, in which the Inspector could be placed on a table when adjusting; thence it could be removed and held in the hand of the surgeon, or of his assistant, during inspection.

The concave mirror might be attached to the globe by means of a screw, and the tube composed of two parts, the central to contain the large convex lens, and formed so as to screw into the ring, and the other part to be fixed as formerly delineated, and by this means the mirror and lenses could be more easily cleaned or replaced when broken, than formerly.

The candle could likewise be elevated or depressed by a screw inside of the candlestick, so as to keep the flame opposite to the centre of the reflecting mirror and convex lens.

The globe and tubes, with these improvements, should be made of brass, in order to allow of the screws being formed in the substance of the instrument, and they might also be of rather less size than those mentioned in the former part of this work. The whole of the inside of the globe and tube ought to be plated with silver and burnished. A mahogany case should be made to contain the globe, tubes and ring, with the small

standard, and by these alterations the Inspector would be rendered more portable, and consequently of more utility to the general practitioner than when constructed on the original plan.

It can likewise answer every purpose of the Aurist, by securing the globe and tube to the male screw, as mentioned above, and then placing it in the large standard, where it could be applied to the inspection of the meatus, agreeably to the directions given in Chap. I. of this work. I have been thus particular in detailing the alterations now making in the Inspector, because there are some persons who if they should make an instrument, although for, and on the principles of the inventor, yet, by adding a nail, or the slightest alteration, even in size, they directly apply their own name to it, as their *improved instrument*, and thereby rob the author of the merit of the invention.

NOMENCLATURE
OF THE
DISEASES OF THE HUMAN EAR.

ORDER I.—MORBI EXTERNI.

DISEASES OF THE EXTERNAL DIVISION.

GENUS I.—DEFECTUS.

THE AURICLE DEFECTIVE.

- Species 1.—*Auricula Egena*, auricle wanting.
2.—*Auricula Plana*, auricle flat and thin.

GENUS II.—IMPERFOSSIO.

IMPERFORATION OF THE MEATUS AUDITORIUS EXTERNUS.

- Species.—*Meatus Deficiens*, meatus wanting.

GENUS III.—DEFORMITAS.

FAULTY SHAPE OF THE MEATUS AUDITORIUS EXTERNUS.

- Species 1.—*Meatus Perminutus*, meatus very small.
2.—*Meatus Peramplus*, meatus very large.
3.—*Meatus Tumidus*, cerumenous glands and integuments tumid and thickened.

GENUS. IV.—IMPEDIMENTUM EXTERNUM.

OBSTRUCTION OF THE MEATUS AUDITORIUS EXTERNUS.

Species 1.—*Impedimentum Extraneum*, from Extraneous substances.

2.—*Impedimentum Induratum*, from indurated wax.

3.—*Impedimentum Polyposum*, from polypi.

4.—*Impedimentum Excrescens*, from excrescences.

GENUS. V.—SECRETIO IMPERFECTA.

IMPERFECT SECRETION OF WAX.

Species 1.—*Secretio Imperfecta (Quantitate)* in quantity.

2.—*Secretio Imperfecta (Qualitate)* in quality.

3.—*Secretio Imperfecta (Utrisque)* in both.

GENUS. VI.—INFLAMMATIO EXTERNA.

INFLAMMATION OF THE PARTS COMPREHENDED IN THE EXTERNAL DIVISION.

Species 1.—*Inflammatio Auditu Permanente*, pain without diminution of hearing.

2.—*Inflammatio Diminuta*, pain with diminution of hearing.

3.—*Inflammatio Suppurata*, pain with diminution of hearing, accompanied with discharge from ulcerous eruptions.

ORDER II.—MORBI INTERMEDII.

DISEASES OF THE MIDDLE DIVISION.

GENUS. VII.—INFLAMMATIO INTERMEDIA.

INFLAMMATION OF THE PARTS COMPREHENDED IN THE MIDDLE
DIVISION.

- Species 1.—*Inflammatio Intermedia (Simplex)* pain without diminution of hearing.
- 2.—*Inflammatio Intermedia (Febrilis)* pain with diminution of hearing and fever.
- 3.—*Inflammatio Intermedia (Febrilis et Clausa,)* pain with diminution of hearing, fever and closure of the Eustachian tube.
- 4.—*Inflammatio Intermedia (Purulenta,)* painful sensations with puriform discharge from the Tympanum, great diminution of hearing and fever, sometimes accompanied with polypi and fungi.

GENUS. VIII.—SPASMUS.

SPASMODIC PAIN FELT SUDDENLY IN THE TYMPANUM.

- Species.—*Spasmus subitus*, sudden acute pain in the Tympanum.

GENUS IX.—IMPEDIMENTUM INTERMEDIUM.

OBSTRUCTION OF THE EUSTACHIAN TUBE.

- Species 1.—*Impedimentum Intermedium (Ulcerosum)* from ulceration.
- 2.—*Impedimentum Intermedium (Adhesum)* from adhesion.
- 3.—*Impedimentum Intermedium (Arctum)* from stricture.
- 4.—*Impedimentum Intermedium (Induratum)* from induration.
- 5.—*Impedimentum Intermedium (Polyposum)* from polypi.
-

ORDER III.—MORBI INTERNI.

DISEASES OF THE INTERNAL DIVISION.

GENUS X.—INFLAMMATIO INTERNA,

INFLAMMATION OF THE PARTS COMPREHENDED IN THE INTERNAL DIVISION.

- Species 1.—*Inflammatio Labyrinthi*, pain in the Labyrinth, deafness and fever.
- 2.—*Inflammatio Labyrinthi et Cerebri*, pain in the Labyrinth, cerebrum and its membranes, accompanied with total deafness and fever.

GENUS. XI.—INFIRMITAS.

DEBILITY OF THE AUDITORY NERVE, WITHOUT INFLAMMATION.

Species 1.—*Infirmitas Casu*, from decay.

2.—*Infirmitas Violata*, from injury (previous.)

GENUS. XII.—INHABILITAS.

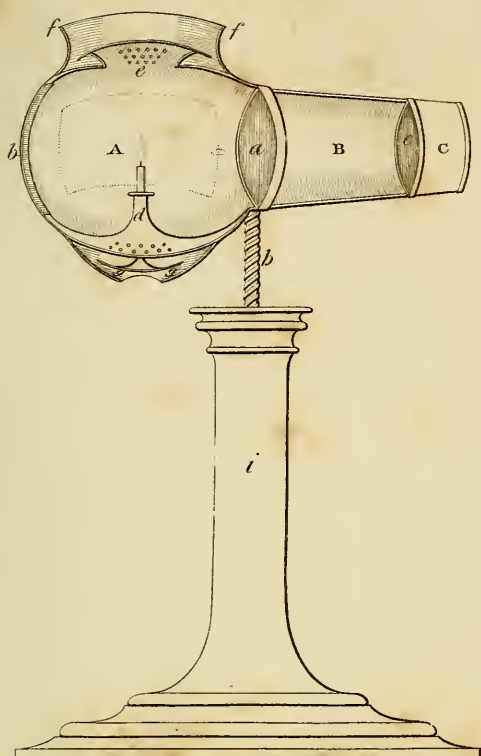
INCAPABILITY OF THE AUDITORY NERVE FOR SENSATION.

Species 1.—*Inhabilitas Juvenis*, congenital, accompanied with dumbness.

2.—*Inhabilitas Senilis*, from decay, chiefly in very old subjects.

3.—*Inhabilitas Violata*, from injury.

FINIS.

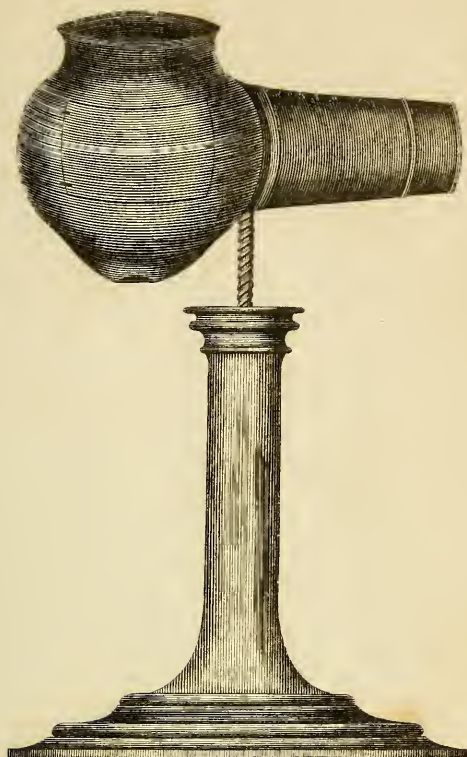


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Inspector Auris.
(The Section)





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Fig. 4.

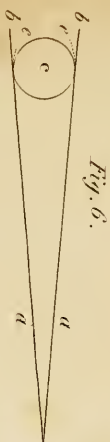


Fig. 6.

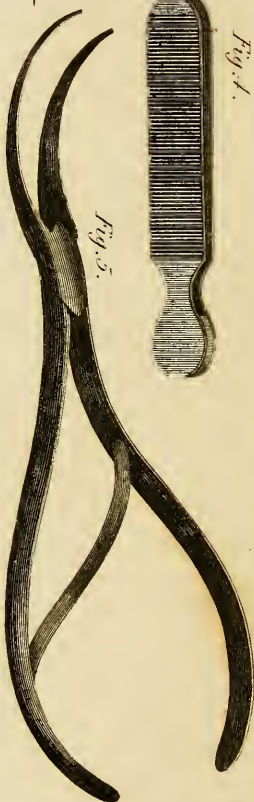


Fig. 5.



Fig. 1.

N^o 1.



Fig. 2.

N^o 2.



Fig. 3.

Chromatic Instruments.

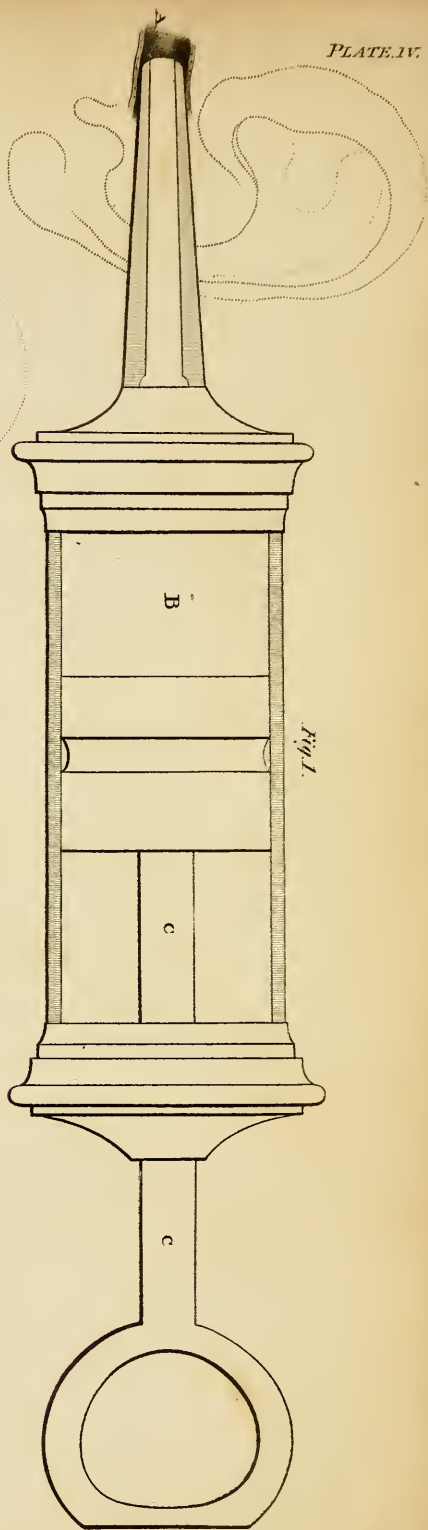


Fig. 1.

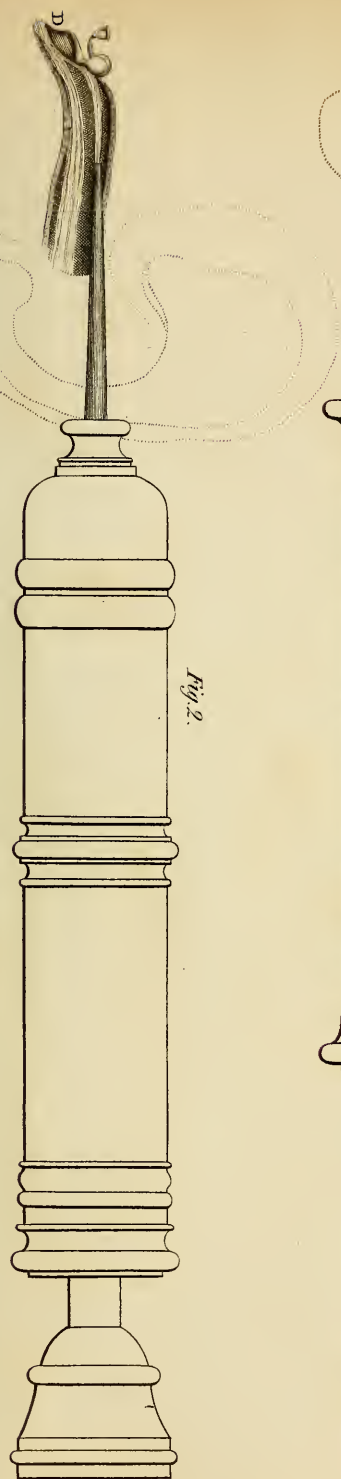


Fig. 2.

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Theory of Springing?

Fig. 1.

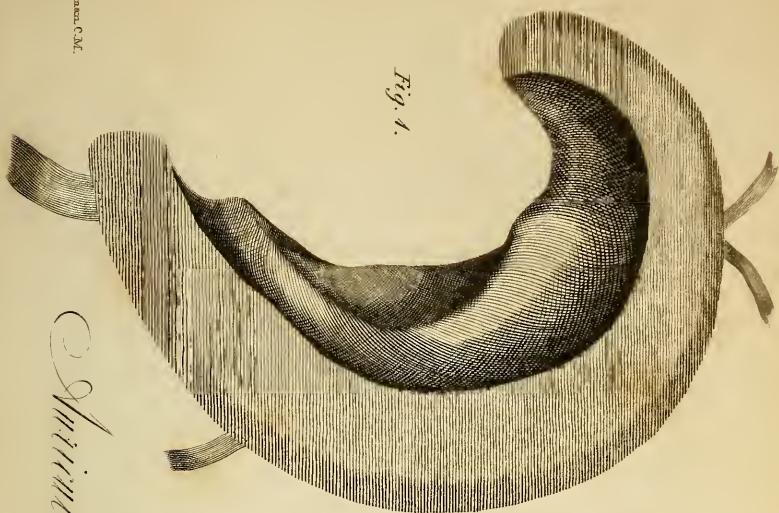
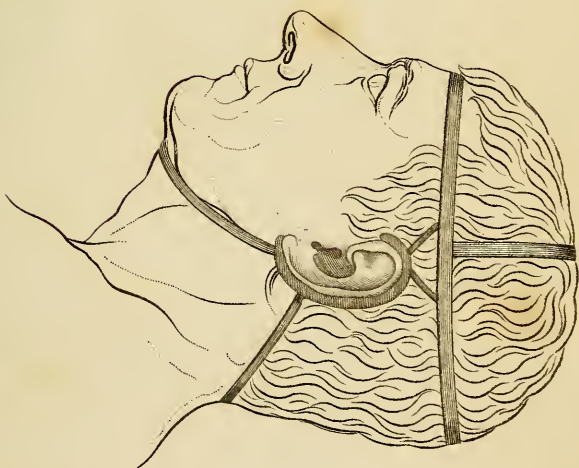


Fig. 2.



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The Author has received a Vote of Thanks from the Royal Society of Edinburgh, for his present of a copy of the Work, which was ordered to be deposited in the Library of the Society.

The following are extracts from letters received from various Medical Gentlemen.

“ I think the view which you have given of the Anatomy of the Ear is the *most systematic* of any which I have seen; for every preceding view of it communicated only an unconnected idea of its general structure.

“ Sir ASTLEY COOPER, to the Author.

“ I have received your very elegant and useful work, on the Anatomy of the Human Ear. The connected and accurate view of the whole structure of that Organ pleased me exceedingly, and is extremely well adapted to the purpose you had in view—A Guide to Acoustic Surgery. The Surgical Remarks, and Synoptical Table of Diseases of the Ear, are very valuable additions to the Anatomical part.

“ T. S. TRAILL, M.D. F.R.S.E. to the Author.

“ Your work on the Human Ear, does you, in my opinion, infinite credit. Having perused it carefully I feel justified in saying so. It is both scientific and will be practically useful.

“ A HUNTER, M. D, Physician to the Infirmary, and to the House of Recovery, Leeds, to the Author.

“ I was much gratified the other day by hearing Dr. BARCLAY, of Edinburgh, speak strongly in favour of your work, as one of the best on the subject that had as yet appeared: and I feel confident, had he not thought so, he would not have spoken of it in his class as he did.

“ W. HAMILTON, Esq. Surgeon in the Hon. East India Co.'s Service, to the Author.

“ I consider it as a work of great merit, and calculated to be useful, and that its style and execution do you much credit.

“ JOHN F. M'FARLANE, Esq. one of the Presidents of the Royal Medical Society, Edinburgh, to the Author.

“ I have looked over the book with great attention, and believe that the directions which you have given in it, respecting the mode of puncturing the Tympanum, will be found valuable by practitioners in Acoustic Surgery, because more explicit and particular than the instructions usually delivered on the subject in treatises on Surgery. The Plate also promises to be very useful, in conveying a correct idea of the relative situation of the various parts of the Ear.— Whenever I have occasion to re-consider this branch of Surgery, it will be a point with me to turn again to your publication, as a *source of practical information*.

“ SAMUEL COOPER, Esq. Member of the Medical and Chirurgical Society of London, &c. &c. Author of the ‘ First Lines of the Practice of Surgery, ‘ Surgical Dictionary,’ &c. to the Author.

“ I have received your kind present, with which I am highly gratified. A Plate of the *kind* given by Mr. Buchanan, was much wanted, and I have recommended it to all my pupils.

“ E. MILLIGAN, M. D. Licentiate of the Royal College of Physicians, [Lecturer on Physiology, Therapeutics, &c. &c. Edinburgh, to A. TURNBULL, M. D. Physician to the Hull and Sculcoates Dispensary.

“ The object of an operation for perforating the Membrana Tympani, ought to be, to make such an opening as shall not be too large, or destroy the property of the Membrane, on the one hand, whilst on the other, we use such precautions as shall render it permanent. It appears to me that the *method you employ is accordant to this single idea of the intention*.

“ JOHN BURNS, C. M. Regius Professor of Surgery, University of Glasgow, to the Author.

“ Your work has afforded me much satisfaction. Your Plate gives a more connected and natural view of the relative Anatomy of the Ear than any I have examined; and your tabular view of the diseases and treatment of the Ear, greatly facilitate a lucid and exact perception of these subjects.

“ G. C. MONTEATH, M. D. Senior Medical Officer to the Glasgow Dispensary for Diseases of the Eye, Author of ‘ Observations, &c. on Wheller’s Manual of Diseases of the Human Eye, &c. &c.’ to the Author.

“ I perused the work with a great degree of pleasure, and I am happy to see that the result of the many sacrifices which you have made for information on the subject, even when a student, is now rendered equally useful to the profession and to yourself.

“ ROBERT MARSHALL, Esq. Demonstrator of Practical Anatomy and Operative Surgery, Edinburgh, to the Author.”

The Author has also received a Vote of Thanks from the Faculty of Physicians and Surgeons of Glasgow, the Royal Medical Society of Edinburgh, and the Royal Society of Literature of London, for his present of a Copy of the Work to each of these Institutions.

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